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ABSTRACT

A total of 160 five-year-old children from Head Start-eligible families were assigned to two treatments during a 6-month Head Start program. The experimental group received the Environmental Academics Program for one to one and a half hours per school day, and the ongoing Head Start program for the balance of the day. The control group received the ongoing Head Start program for the full day. The experimental group made significant gains over the control group on IQ and achievement measures. (Author/DB)

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AN EVALUATION OF THE EFFECTIVENESS OF A NEW TYPE OF PRESCHOOL COMPENSATORY PROGRAM: ENVIRONMENTAL ACADEMICS

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Abstract

160 5-year old children from Headstart-eligible families were assigned to two treatments during a 6-month Headstart program. The experimental group received the Environmental Academics Program, developed by Dr. Robert C. Dwyer and Jane K. Elligett, for 1-1½ hours per school day, and the ongoing Headstart program for the balance of the day. The control group received the ongoing Headstart program for the full day. The experimental group made significant gains over the control group on IQ and achievement measures.

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Efforts to overcome the school disadvantagement of children of poor families are based on the proposition that these children have had less pre-school experience of a certain kind. It is not suggested that they have had less experience per se. The suggestion is rather that their pre-school

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* The Environmental Academics program was adopted for 85 classrooms, during the year following this study, by the Hillsborough County Board of Public Instruction for their Headstart and Migrant Programs and by the Pinellas County Headstart Program.

experience has not been oriented toward "school preparation". It has not included the pervasive cultivation and encouragement of academic pursuits more common in middle-class homes (2,7).

As a consequence, the disadvantaged child enters the school with a number of academic deficits. These deficits are immediately compounded by two factors: (1) his teacher's vocabulary and pronunciation may differ radically from his own, and (2) the instructional program, including its materials, are alien in both content and form (8).

A wide variety of compensatory pre-school programs have been designed to overcome these handicaps. They range from highly structured programs based on the principles of operant conditioning, to informal programs of cultural exposure. The educational problems of the disadvantaged child have proven singularly resistant (6). The authors of Environmental Academics believe that this resistance is due, at least partially, to a characteristic common to many if not most such programs: they separate academics from purposeful life experiences - purposeful, i.e., <u>from the perspective of the child.</u> The primary characteristic of Environmental Academics is its reversal of this separation: Environmental Academics structures an environment in which academic learning is not only "relevant",

but functional. The child acquires skills and concepts in the process of solving problems he wants to solve (5).

The key to the validity of such a program is its adherence to the natural interests of the child, its disciplined selection of problems which the child (not the teacher) really wants to solve. The Environmental Academics program rests on the premise that many of the natural interests of the young child center around things he can play with, eat, save or take home, and that many of the problems he really wants to solve are problems involved in acquiring these things. Consequently, this is the problem-environment into which the academics (numbers, reading, writing and oral language) are embedded by the program.

The present study sought to assess selected effects of the Environmental Academics program. The subjects were 160 children from Headstart-eligible families. Eighty children received the Environmental Academics program for 1-1½ hours of the day, and the ongoing Headstart program for the balance of the day. Eighty children received the ongoing Headstart program for the full day. The hypothesis investigated was:

> There will be no significant differences in measures of IQ or standardized readiness and achievement scores, attributable to the experimental as compared with the ongoing program.

Method

Subjects: Of the 160 children, 80 were residents of Hillsborough County, Florida, and 80 of Pinellas County. All children met the economic requirements for Headstart participation. All were five years old at the outset of the study or by December, 1969. 80 children in Hillsborough County were assigned to two schools, each of which had two Headstart classrooms. The 40 children in each school were assigned to the experimental or control classroom by random selection. In Pinellas County, random assignment of pupils was not feasible, since the available Headstart centers each had only one class. As the closest approximation, the four centers were paired by neighborhood, so that within each neighborhood there was one experimental class and one control. Statistical analysis is applied only to the 80 subjects for whom random assignment was feasible. Following these tables, the means for the non-randomized subjects are presented separately for completeness of reporting.

Treatment: The experimental group received the Environmental Academics program for 1-1½ hours per day, usually in the morning, and the ongoing Headstart program for the balance of the day. The control group received the ongoing Headstart program for the full day. The study was conducted from October, 1969 to May, 1970.

Procedures and materials of the treatment program were as follows: By means of word cards and number cards, the child selects items which he wants and the number he wants. After taking his word and number cards, the child goes to a table where the items are arranged, counts and takes the items designated on the cards. The child obtains whatever his cards say, with the class's or teacher's help whenever necessary. Discrimination depends upon trial and error. As the program progresses, the items are changed, the number of choices increases, and the total number is determined by the sum of two number cards.

After selecting their items, the children have a time for trading with other children (socialization), oral reporting of what they wanted, got, did, etc., that is, reconstruction of their experience (cognitive and language development), drawing the items, and tracing or copying the cards, and card-drill by a child playing teacher. Finally, experience charts are dictated by pupils and then used in the traditional manner.

Instruments: The following tests were administered. In the randomly assigned classes, the Stanford-Binet Intelligence Scale Form L-M was administered as a pretest during the three weeks preceding the commencement of treatment, and as a post-test during the three weeks at the close of the study (11).

In all classes, the Metropolitan Readiness Tests, the Clymer-Barrett Prereading Battery and the Comprehensive Mathematics Inventory were administered as post tests only, during the three weeks at the close of the study (9,3,4).

The Stanford-Binet tests were administered by certified psychologists with doctoral degree. Group testing was conducted by graduate personnel from the University of South Florida.

Statistics: The comparative effects of the experimental and control programs were measured by analysis of covariance with Stanford-Binet pretest scores the covariate (1).

Results

Table 1 indicates experimental and control group means for the Stanford-Binet Intelligence Scale, administered as pretest and post test.

Table 1

	Stanford-Binet Pretest Mean	Stanford-Binet Post test Mean
Experimental	89.563	95.758
Control	88.258	88.710

$F=8.938$

$p < .005$

A review of Table 1 reveals a significant difference in the experimental source of variation. The experimental group obtained a significant gain in the post test mean, as well as a significantly higher post-test mean than the control group.

The pre-test scores of both groups were used as covariates for the following post-test measures.

Table 2 indicates the experimental and control group means for the Clymer-Barrett Prereading Battery.

Table 2

	Clymer-Barrett Prereading Subtest Means						
	Letter Recognition	Word Matching	Beginning Sounds	Ending Sounds	Shape Completion	Copying Sentences	Total
Experimental	14.069	10.345	9.966	12.276	3.966	0.724	52.103
Control	12.607	7.750	7.893	9.321	3.107	0.429	41.214
F	0.224	3.588	6.696	5.244	0.904	0.739	4.786
P	--	$\leq .10$	$< .05$	$\leq .05$	----	---	$< .05$

A review of Table 2 reveals significantly greater post test means for the experimental group, in total scores and in recognition of beginning sounds and ending sounds.

Table 3 indicates the experimental and control group means for the Metropolitan Readiness Tests.

Table 3

Metropolitan Readiness Subtest Means

	Word Meaning	Listening	Word Matching	Alphabet	Numbers	Copying
Experimental	5.500	8.719	5.750	5.938	9.625	3.313
Control	5.774	8.032	3.839	5.387	7.355	2.903
F	0.496	1.337	7.554	0.238	6.566	0.192
P	--	--	$<.01$	---	$<.05$	

Table 3 reveals significantly greater post test means for the experimental group, in word matching and numbers.

Table 4 indicates the experimental and control group means for the Comprehensive Mathematics Inventory.

Table 4

Comprehensive Mathematics Inventory Means

Experimental	61.906
Control	53.419
F	7.876
P	$<.01$

Table 4 reveals a significantly greater post test mean for the experimental group.

Table 5 reports the summary means for those classes which were paired without randomization of subjects.

Table 5

	Clymer Barrett Pre-Reading Battery (Post-test)	Metropolitan Pre-School Readiness (Post-test)	Comprehensive Mathematics Inventory (Post-test)
Experimental	69.6	48.1	70.3
Control	55.9	41.5	64.2

The data in Table 5 yields the same pattern of differences as those found in the preceding tables.

Conclusions and Implications

The study indicated that the Environmental Academics program, inserted for 1-1½ hours per day, over a 6-month period, resulted in a significantly greater improvement of academic indices for pre-school disadvantaged children, than the regular ongoing program without this insertion. Similar positive conclusions have been drawn for other structured programs (10). The implication of this study, however, is that the structure need not consist of programmed skill sequences. The structure may consist of an environment in which academic skills become functional to the child, and in which both skills and concepts are developed heuristically.

A crucial question is whether a more receptive attitude toward academics is fostered by this approach, and if so, whether this attitude will result in long-term academic as well as affective differentials. It is hoped that further investigation of these questions will be generated by the empirical data of this study.

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